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[Amendment Procedure]
[Submission Date] 13th October 1999
[Amendment Procedure 1]
[Amendment object Document Name] Detailed Statement
[Amendment Object Item Name] Claim 1
[Amendment Method] Change
[Amendment Contents]
[Claim 1]
A polishing device, having a turntable with an abrasion cloth applied on its upper surface and a top ring, and the object to be polished is polished by applying a fixed power of pressure by placing it between the abovementioned turntable and the top ring, and this polishing device, which gives a smooth and mirror finished surface, having a concave part which accommodates the object to be polished, is characterized by a pressure ring arranged in a free vertical motion on the circumference of the top ring which maintains the outer part of the polishing object by the internal periphery of this concave part, and a tool to apply pressure to the abrasive cloth installed on the pressure ring 3, and adjustable thrust of the pressure tool

[Amendment Procedure 2]
[Amendment object Document Name] Detailed Statement
[Amendment Object Item Name] Claim 12
[Amendment Method] Change
[Amendment Contents]
[Claim 12]
A polishing method in which a turntable which has an abrasion cloth applied to its upper surface and a top ring, and the object to be polished is polished by means of applying a fixed pressure by placing it between the abovementioned turntable and the top ring, and the polishing method which gives a smooth and mirror finished surface is characterized by a pressure ring arranged in a free vertical motion on the circumference of the top ring which maintains the outer part of the polishing object by the internal periphery of this concave part and the circumference of the abrasive cloth which comes in contact the polishing object polishes while pressuring with a fixed thrust which depends on the thrust of the top ring.

[Amendment Procedure 3]
[Amendment object Document Name] Detailed Statement
[Amendment Object Item Name] Claim 17
[Amendment Method] Change
[Amendment Contents]
[Claim 17]
A manufacturing method for semiconductors characterized by the fact that the semiconductor wafer is placed between the turntable and the top ring at the time of polishing the semiconductor wafer by applying a fixed thrust, and it has a concave part which accommodates the semiconductor wafer and a pressure ring

arranged allowing a free vertical motion on the circumference of the top ring which maintains the outer part of the polishing object by the internal periphery of this concave part and the circumference of the abrasive cloth which comes in contact with the semiconductor wafer polishes while pressuring with a fixed thrust which depends on the thrust of the top ring.

[Amendment Procedure 4]
[Amendment object Document Name] Detailed Statement
[Amendment Object Item Name] 0014
[Amendment Method] Change
[Amendment Contents]
[0014]
[Means to the solve problem]
To achieve the abovementioned objectives, the polishing device of this invention has a turntable which has an abrasive cloth applied on its upper surface and a top ring. The object to be polished is polished by placing it between the abovementioned turntable and the top ring, and by applying a fixed pressure. The polishing device which gives a smooth and mirror finished surface is characterized by having a concave part which accommodates the above-mentioned object to be polished, and a pressure ring arrangment allowing a free vertical motion on the circumference of the top ring which maintains the outer part of the polishing object by the internal periphery of this concave part. Also, a pressurizing tool corresponding to the abrasion cloth is installed on the pressure ring. This pressurizing tool has adjustable thrust.

[Amendment Procedure 5]
[Amendment object Document Name] Detailed Statement
[Amendment Object Item Name] 0015
[Amendment Method] Change
[Amendment Contents]
[0015]
Moreover, the polishing method of this invention is characterized as having a turntable which has an abrasive cloth applied on its upper surface and a top ring. The object to be polished is polished by placing it between the above-mentioned turntable and the top ring and applying a fixed thrust and this polishing method, which gives a smooth and mirror finished surface, has a concave part which accommodates the polishing object and a pressure ring arrangement allowing free vertical motion on the circumference of the top ring which maintains the outer part of the polishing object by the internal periphery of this concave part the circumference of the abrasive cloth, which comes in contact with the object to be polished., It polishes while pressuring with a fixed thrust which depends on the thrust of the top ring.

PATENT ABSTRACTS OF JAPAN

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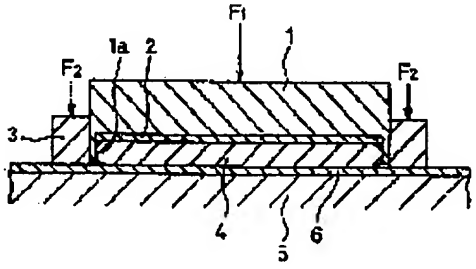
(54) POLISHING DEVICE AND POLISHING METHOD

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a polishing device and a polishing method capable of preventing the occurrence of the excess and deficiency of a polishing amount around the periphery of a polishing object, and performing a polishing process at a higher degree of flatness by causing a presser ring to apply an optimum pressing force to an abrasive cloth, depending on the polishing object or a polishing condition.
SOLUTION: A polishing device is equipped with a turntable 5 having an abrasive cloth 6 pasted to the upper surface, and a top ring 1, and holds a semiconductor wafer 4 between the turntable 5 and the top ring 1 in such a state as pressed at the prescribed force. The semiconductor wafer 4 is thereby polished, flattened and finished to mirror surface. Regarding the polishing device so formed, a presser ring 3 is provided around the top ring 1 having a recess for housing the semiconductor wafer 4 in such a state as freely movable in a vertical direction, and a presser means is provided for pressing the presser ring 3 to the abrasive cloth 6. Also, the pressing force of the pressing means is made variable.



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【公報種別】特許法第１７条の２の規定による補正の掲載
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【手続補正書】
【提出日】平成１１年１０月１３日（１９９９．１０．１３）
【手続補正１】
【補正対象書類名】明細書
【補正対象項目名】請求項１
【補正方法】変更
【補正内容】
【請求項１】　上面に研磨布を貼ったターンテーブルとトップリングとを有し、前記ターンテーブルとトップリングとの間にポリッシング対象物を介在させて所定の力で押圧することによって該ポリッシング対象物を研磨し、平坦且つ鏡面化するポリッシング装置において、前記ポリッシング対象物を収容する凹部を有し該凹部の内周面によってポリッシング対象物の外周部を保持するトップリングの周囲に押圧リングを上下動自在に配置し、前記押圧リングを研磨布に対して押圧する押圧手段を設け、該押圧手段の押圧力を可変にしたことを特徴とするポリッシング装置。
【手続補正２】
【補正対象書類名】明細書
【補正対象項目名】請求項１２
【補正方法】変更
【補正内容】
【請求項１２】　上面に研磨布を貼ったターンテーブルとトップリングとを有し、前記ターンテーブルとトップリングとの間にポリッシング対象物を介在させて所定の力で押圧することによって該ポリッシング対象物を研磨し、平坦且つ鏡面化するポリッシング方法において、前記ポリッシング対象物を収容する凹部を有し該凹部の内周面によってポリッシング対象物の外周部を保持するトップリングの周囲に押圧リングを上下動自在に配置し、ポリッシング対象物が接触する研磨布の周囲を、押圧リングによりトップリングの押圧力に基づいて決定された押圧力で押圧しながら研磨することを特徴とするポリッシング方法。
【手続補正３】
【補正対象書類名】明細書
【補正対象項目名】請求項１７
【補正方法】変更
【補正内容】
【請求項１７】　半導体製造方法において、ターンテーブルとトップリングとの間に半導体ウエハを介在させて所定の力で押圧することによって半導体ウエハを研磨するに際して、半導体ウエハを収容する凹部を有し該凹部の内周面によってポリッシング対象物の外周部を保持するトップリングの周囲に押圧リングを上下動自在に配置し、半導体ウエハが接触する研磨布の周囲を、押圧リングによりトップリングの押圧力に基づいて決定された押圧力で押圧しながら研磨することを特徴とする半導体製造方法。
【手続補正４】
【補正対象書類名】明細書
【補正対象項目名】００１４
【補正方法】変更
【補正内容】
【００１４】
【発明を解決するための手段】上述した目的を達成するため本発明のポリッシング装置は、上面に研磨布を貼ったターンテーブルとトップリングとを有し、前記ターンテーブルとトップリングとの間にポリッシング対象物を介在させて所定の力で押圧することによって該ポリッシング対象物を研磨し、平坦且つ鏡面化するポリッシング装置において、前記ポリッシング対象物を収容する凹部を有し該凹部の内周面によってポリッシング対象物の外

周部を保持するトップリングの周囲に押圧リングを上下動自在に配置し、前記押圧リングを研磨布に対して押圧する押圧手段を設け、該押圧手段の押圧力を可変にしたことを特徴とするものである。

【手続補正５】

【補正対象書類名】明細書

【補正対象項目名】００１５

【補正方法】変更

【補正内容】

【００１５】また本発明のポリッシング方法は、上面に研磨布を貼ったターンテーブルとトップリングとを有し、前記ターンテーブルとトップリングとの間にポリッシング対象物を介在させて所定の力で押圧することによって該ポリッシング対象物を研磨し、平坦且つ鏡面化するポリッシング方法において、前記ポリッシング対象物を収容する凹部を有し該凹部の内周面によってポリッシング対象物の外周部を保持するトップリングの周囲に押圧リングを上下動自在に配置し、ポリッシング対象物が接触する研磨布の周囲を、押圧リングによりトップリングの押圧力に基づいて決定された押圧力で押圧しながら研磨することを特徴とするものである。